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ABSTRACT

Data on the characteristics of 375,000 men and women who were in high school in 1960, and follow-up data on their education, career and personal experiences through age 29, form the basis of the longitudinal study Project TALENT. Outlined in the first part of this report are the Project's activities and accomplishments in their efforts to realize the following goals: maintenance and enhancement of data bank capabilities; maintenance of data tape quality; maintenance of current addresses; analysis of differential school effects; and the dissemination of analysis results and other project activities. The second portion of the report consists of a research paper which uses test results from a subset of 7,200 Project TALENT subjects, taken when they were in the 9th and 12th grades, to examine differences between high schools in students' educational aspirations and cognitive score gains in various subjects. Significant differences were found in all subject areas and in educational aspirations. It is reported that school differences accounted for a moderate portion of total variance in 12th grade scores; but it is also stated that school effects may be more closely attributed to departmental, rather than general school characteristics. (Author/AEF)

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PROJECT TALENT DATA BASE MAINTENANCE

FINAL REPORT

Grant No. NIE-G-74-0003
Revision No. 11 (1/15/78)

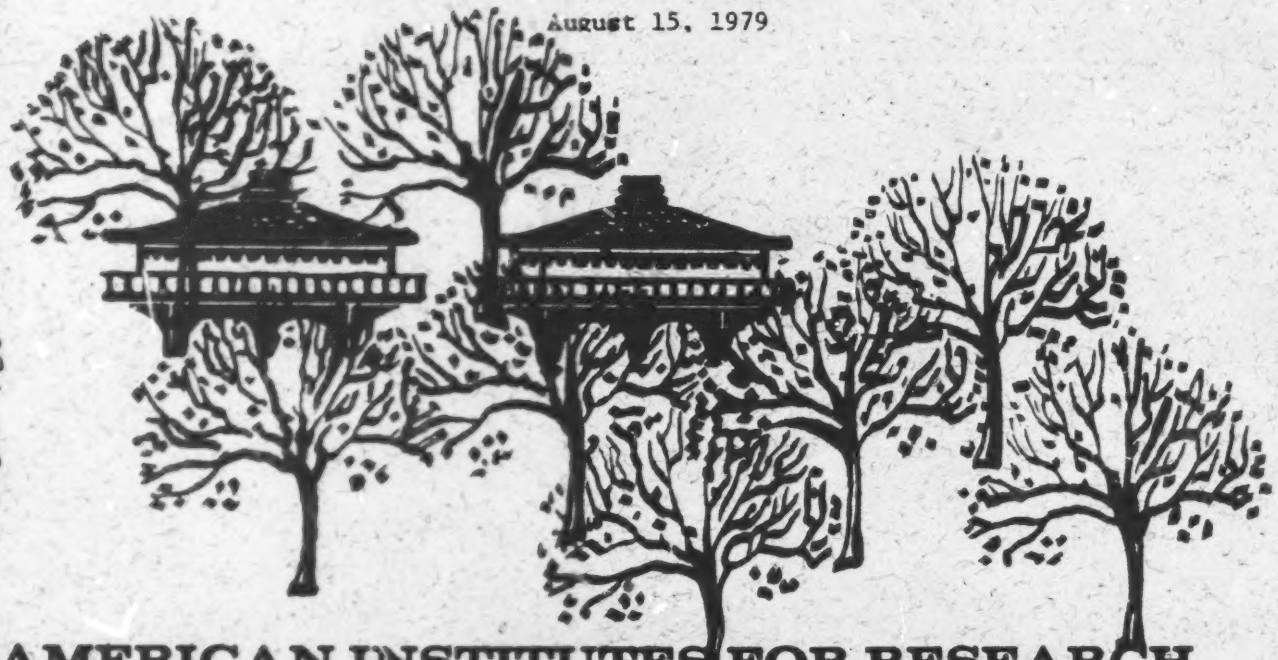
Submitted to

NATIONAL INSTITUTE OF EDUCATION

Principal Investigator: William V. Clemans
Project Director: Lauress L. Wise

August 15, 1979

TM 610 480



AMERICAN INSTITUTES FOR RESEARCH
Post Office Box 1113 / Palo Alto, California 94302

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PROJECT TALENT DATA BASE MAINTENANCE ACTIVITIES (1/15/78 TO 1/15/79)

FINAL REPORT

Since its inception in 1957, Project TALENT has been a major national effort to assess the extent to which and the ways in which America's young men and women develop their talents and realize their hopes. Supported initially by the Cooperative Research Program in the U.S. Office of Education, the National Science Foundation, the National Institute of Mental Health, and several other federal agencies, Project TALENT is a longitudinal study of a large, nationally-representative sample of men and women who were in high school in 1960. The project's data base now contains an unprecedented store of data on these individuals' characteristics in high school as well as their subsequent educational, career, and personal experiences through about age 29. This information has provided the raw material for more than 200 studies--by Project TALENT staff and numerous other researchers--of the educational, career, and personal development of individuals and groups. Such studies have been, and will continue to be, very important to schools and other social institutions in their efforts to help young people develop productive and personally satisfying lives.

Since the completion in 1976 of the 11-year follow-up of the TALENT participants, staff efforts have been devoted to (1) developing plans for the 20-year follow-up of the participants and (2) maintaining the data base as a resource for researchers throughout the country. This report covers activities relating to the latter objective, maintenance of the data base, during the period from 15 January 1978 to 15 January 1979.* The particular tasks carried out in this period were as follows:

1. Maintain and enhance Data Bank response capability.
2. Maintain the quality of the data tapes.
3. Maintain current addresses.
4. Analysis of differential school effects.
5. Dissemination of analysis results and other Project TALENT activities.

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* See Designing a Study of Adult Accomplishment and Life Quality (Steel and Wise, 1978) for a discussion of plans for a fourth follow-up of TALENT participants.

The activities and accomplishments relating to each of these tasks are described on the following pages. A summary of the products delivered to NIE is provided in Attachment A to this report.

Task 1
Maintain and Enhance Data Bank Response Capability

Throughout the grant year, TALENT staff worked on three main activities related to this task: responding to inquiries from potential Data Bank clients, preparing an annotated bibliography of Project TALENT reports, and cataloging and indexing available computer tapes and printouts. Each of these activities is discussed below.

Responding to Requests and Inquiries

The provision of information and guidance to researchers wishing to access the TALENT data base was carried out on a consistent basis throughout the year. During this time, four new Data Bank projects were initiated, as shown in Table 1. In addition, a total of 79 inquiries to the Data Bank, ranging from requests for information about the data base to requests for detailed work plans and cost estimates, were also received during this period. Details regarding the nature of the inquiries received and responses made during the final quarter of the grant period are provided in Table 2; comparable data for inquiries received during the first three quarters were provided in Interim Reports 78-1, 78-2, 78-3, and 78-4 respectively. In addition, a total of 155 inquiries from teachers, counselors, and other school practitioners for information and/or materials relating to TALENT were received and processed during the year. The responses to inquiries received during the fourth quarter are summarized in Table 3; as with the data bank inquiries, data for the first three quarters were presented in the interim reports.

Further enhancements to our Data Bank response capability were suggested at NIE's "Alternative Designs" Conference held in October 1978. These include the creation of additional standard release worktapes that include only the most frequently used variables and the creation of "systems files" for one of the more common statistical packages to facilitate the transmission of labelling and missing data indicators and eliminate the

Table 1

Data Bank Projects Initiated During Grant Period (1/15/78-1/15/79)

- Dr. Elinor M. Woods
  CEMREL
  Chicago, Illinois

  Contract 3/2/78; tape sent 4/17/78
  Sponsor: ASPE
  Topic: Synthesize and assess what is known about the quality of educational opportunities for minority pupils in the past 20 years.

- Dr. James D. Rodgers
  The Pennsylvania State University
  University Park, Pennsylvania

  Contract 6/16/78; analyses completed 10/16/78
  Topic: assess the effects of education variables on the labor market experience of the physically handicapped (continuation of an earlier Data Bank project)

- Dr. Joel Best
  California State University, Fresno
  Fresno, California

  Contract sent 12/14/78; not returned during the grant period but Best told us over phone that he was sending it.
  Topic: occupational expectations of minority students as related to ability of individual student and the percentage of minority students in the high school.

- Dr. Robert C. Nichols
  SUNY Buffalo
  Amherst, New York

  Contract sent 12/18/78; we weren't sure he would sign but sent it with letter as a convenience as his agreement to the contract seemed fairly certain.
  Topic: effect of birth order on specific abilities.

Table 2

Data Bank Inquiries and Responses, 10/15/78 - 1/15/79

11/20/78 — Dr. Robert H. Schnorbus
Federal Reserve Bank of Cleveland
Cleveland, Ohio

Inquiry: Requested preliminary cost estimate for studying occupational characteristics of workers moving into and out of Ohio;
Response: Provided cost estimate for desired work and requested some clarification of the design and analysis plan.

11/27/78 — Dr. Michael Swafford
Vanderbilt University
Nashville, Tennessee

Inquiry: Requested information on TALENT publications and copy of Data Bank Handbook;
Response: Sent publications list and copy of Handbook; mentioned forthcoming Annotated Bibliography.

1/3/79 — Dr. Alexis Molina
Dr. Edmund Gordon
Institute for Urban and Minority Education
Teachers College, Columbia University

Inquiry: Desired information on suitability of TALENT data for study of factors associated with overcoming potential handicaps to success and information about how to obtain data;
Response: Summarized the feasibility of using Project TALENT for a study of the "disadvantaged" who managed to succeed in life (academic, financial success) and sent brochures describing TALENT and a summary of work-to-date of J. J. Card's study on Sex Differences in Realization of Potential.

1/3/79 — Dr. Gordon J. Rhum
Department of Educational Psychology and Foundations
University of Northern Iowa

Inquiry: Requested several specific TALENT documents for use in his instruction and research;
Response: Sent the following materials: (1) copy of most recent TALENT newsletter to respondents; (2) copy of questionnaire used in 11-year follow-up; (3) summary of plans for 20-year follow-up study; (4) references and summaries of articles using TALENT which studied decline in standardized test scores since 1960, opinions of high school students regarding adequacy of their school experience.

1/10/79 — Professor H. D. Seibel
Paedigogische Hochschule Ruhr
Federal Republic of Germany (Dortmund)

Inquiry: Requested information about Project TALENT;
Response: Sent general descriptive brochure and publication list.

1/6/79 — Ms. Judith Stanley
University of California, Irvine

Inquiry: Requested information about TALENT to include in library reference of machine readable data files;
Response: Sent brochures on the Data Base and the Public Use Files.

Table 3

Inquiries Received from School Practitioners and Others, 10/15/78-1/15/79

Date Responded	Address	Material Sent
11/6/78	John T. Healey Director of Student Development Webster College St. Louis, MO 63119	PCG packet
11/6/78	Tom Swinford, Counselor Calvary Baptist High School 4025 Waters Avenue Savannah, GA 31404	PCG packet, Student Booklet
11/6/78	Paulette Weeden Career Center Bakersfield College Bakersfield, CA 93305	PCG packet
11/6/78	Maui Community College Career Development Center 310 Kaahumanu Avenue Kahului, HI 96732	PCG packet, Student Booklet
11/6/78	Linda Seligman, Ph.D. Department of Education George Mason University 4400 University Drive Fairfax, VA 22030	PCG packet, Student Booklet

costs of repeated conversions to a statistical package system file. The TALENT staff plans to seek support for these enhancements and for a small amount of additional effort to develop the software to use the existing on-line formats to "automatically" create and document customized worktapes from a single variable list.

Preparing an Annotated Bibliography

Project TALENT's annotated bibliography became a reality in January 1979 with the release of Publications Based on Project TALENT: An Annotated Bibliography. Authored by Emily Campbell, an Administrative Associate who has worked with the project for the past eight years, the 209-page document includes abstracts of 137 TALENT-based studies as well as descriptive references to 111 related publications. An introduction provides a brief history of Project TALENT, an overview of its methodology and the resulting data base, and guidelines for the use of the bibliography. Also included are a glossary of technical terms and a key-word index to the book's contents.

Fifty copies of the volume have been retained by Project TALENT staff for distribution to NIE staff and others who have been closely involved with the project.* An additional 100 copies are being made available for sale as an AIR publication at a price of $10.00 postpaid. Periodic revisions to the Bibliography are anticipated as new studies based on TALENT data are added to the research literature. The bibliography is expected to serve as a useful reference for researchers both inside and outside AIR who are interested in the past findings and future possibilities of studies based on Project TALENT data.

Cataloging and Indexing Available Tapes and Printouts

To facilitate access to and use of existing TALENT data tapes, a cross-index of tapes containing TALENT data was created. Previous documentation of the various tapes was sometimes sketchy and incomplete. As there are approximately 800 tapes containing TALENT data, gathering information for the desired documentation became a time-consuming task. (This was complicated by the fact that documentation on the older tapes done by previous TALENT staff had gotten "buried" in the files and had to be located by the

*Ten copies of the Bibliography for NIE use have been enclosed with this report.

present staff.) After information was gathered on each tape, a cross-reference file was created. This file (stored as a machine readable data set) listed the tapes by subject (or project number), data set name, tape ID, date of creation, number of relevant files, and identification of project director (or programmer) responsible for the tape creation. This file has been used to create a card index arranged by type of tape (work tape, basic data set, etc.) and within that type, subject matter or project number. A separate index of project numbers and name of project will also be available for ready reference. Figure 1 shows a facsimile of a tape index card.

It is to be hoped that this basic index can, in the future, be improved by a cross-index of variables on each tape. This would make existing tapes of greater use to prospective data bank users. After identifying the variables needed in any proposed study, it might be found that an already existing tape could be used, thus cutting costs for the user by reducing programming time and computer costs involved in creating a new work tape.

Task 2
Maintain the Quality of the Data Tapes

The primary objectives of this task were to (1) investigate anomalies reported by TALENT data tape users, (2) create new backup files as needed to assure the readability of the tapes, and (3) link additional variables into the data base to enhance its research potential. Anomalies investigated during the first nine months of this grant period were reported in prior Quarterly Reports. No new anomalies were uncovered during the final quarter.

Following the Alternative Designs Conference held in October 1978 (see task 5 for a discussion of this conference), discussions were held with the Project Officer concerning the advisability of having the current TALENT data base formally archived in a general data library. Since this would involve copying and possibly reformatting the existing data sets, it was decided that the creation of additional backup files should be delayed until the form and format needed for archiving was clear. Also during this period much of AIR's data processing work was shifted to the Stanford University Computing Facilities (SCIP) from a private timesharing company. A backup copy of the TALENT files was inserted in the SCIP tape library. No problems have been encountered in using these files, indicating the sufficiency of the current system of tape file backups.

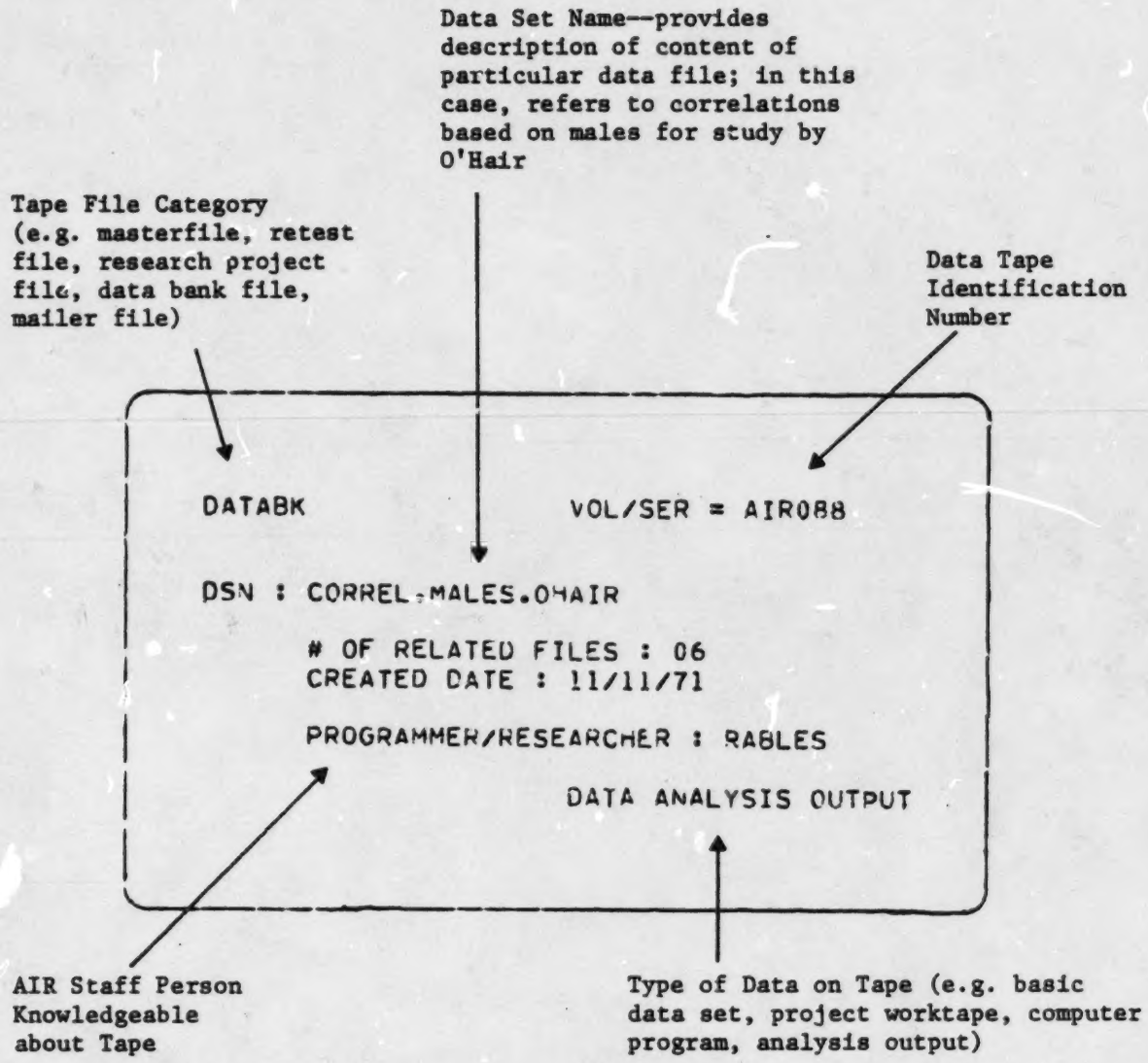
Data Set Name--provides description of content of particular data file; in this case, refers to correlations based on males for study by O'Hair
Tape File Category (e.g. masterfile, retest file, research project file, data bank file, mailer file)
Data Tape Identification Number
DATABK
VOL/SER = AIR088
DSN : CORREL.MALES.OHAIR
OF RELATED FILES : 06
CREATED DATE : 11/11/71
PROGRAMMER/RESEARCHER : RABLES
DATA ANALYSIS OUTPUT
AIR Staff Person Knowledgeable about Tape
Type of Data on Tape (e.g. basic data set, project worktape, computer program, analysis output)

Figure 1. Sample data tape index card

Three very significant enhancements to the TALENT base were made during the past year. The first was the establishment of a standard conversion from the TALENT occupation codes to Census occupation codes based largely on 9th grade 11-year follow-up data where occupations were coded separately under each coding system. This conversion allows researchers to link information on job characteristics keyed to Census codes into the TALENT data base.

The second major enhancement built on the new occupation code conversion to establish an occupational prestige rating for each TALENT occupation code that was consistent with the Census-based ratings used in a wide body of prior research. The specific ratings and the prior Census-based ratings upon which the new ratings are based were described in detail in Interim Report 78-4, which was submitted 15 November 1978.

The final enhancement was the creation of a college data file that can be readily linked to the individual data on college attenders within the TALENT sample. The contents of this file are listed in Attachment B. These data provide several useful bases for defining types of colleges for specific analyses. The F.I.C.E. code, which was included in this file, provides a link to a number of files (e.g., the Higher Education General Information System (HEGIS) with much more extensive data on American colleges.

Task 3
Maintaining Current Addresses

One of the major concerns in a longitudinal study such as Project TALENT is the maintenance of up-to-date addresses for the members of the sample for use in subsequent surveys. Project TALENT's primary maintenance procedure has involved working through the Postal Service to obtain current addresses for participants. Since the Postal Service keeps forwarding addresses for only one year, it has been imperative to mail each participant an annual "locator letter" (the Project TALENT Newsletter) containing a change-of-address card to be returned by the participant. In addition, the newsletter carries an address correction request for the Postal Service, which provides forwarding addresses or notifications of obsolte address when no new address is available.

The 1978 edition of the Project TALENT Newsletter was mailed during May and June to 120,258 participants who had previously been selected for inclusion in the next follow-up survey. The results of this mailing in terms of notifications of address changes along with other contacts from participants during the grant year are summarized in Table 4.

Task 4
Analysis of Differential School Effects

The objective of this task was to demonstrate the capability of the TALENT data base for policy-relevant research through an investigation of the differential effects of high schools with various characteristics. Because the TALENT data base contains information on individuals' characteristics at the beginning and at the end of their high school careers, on their subsequent educational and occupational attainments over an 11-year period, and on the characteristics of the high schools they attended, it represents a unique resource for examining issues in this area.

Following some clarification of the specific questions to be investigated (see Interim Report 78-2), an analysis sample was drawn and worktape created during the summer of 1978. Data analyses were completed during the final quarter of the grant period, and a report summarizing the study objectives, procedures, and results was prepared for presentation at the 1979 meeting of the American Educational Research Association. A copy of that report is included as Attachment C to this report. The paper is also being submitted for publication in the American Educational Research Journal.

Task 5
Dissemination

Public Use File Dissemination

An important goal in the development of the Project TALENT data base has been to foster the use of the data by other researchers for secondary analysis, thus providing an inexpensive alternative to new data collection efforts. A major activity in this area this year was the dissemination of information about the Project TALENT 11-Year Follow-Up Public Use File. This specially-created file contains data for a self-weighted subsample of

Table 4

Contacts with TALENT Participants
during Grant Year (1/15/78-1/15/79)

Type of Contact	Number Received Prior to Newsletter	Number Received Subsequent to Newsletter
Spontaneous letters from participants	96	71
Letters from "lost" participants forwarded from University of Pittsburgh	1	10
Change-of-address cards from newsletter returned	n.a.	4,888
Address corrections returned by Post Office	n.a.	7,874
Notification of address unknown from Post Office	n.a.	29,618
Notification of obsolete address from current residents	n.a.	112
Notification of participant's decease	n.a.	78

4,000 of the original 400,000 Project TALENT participants (1,000 men and women from each of the high school classes of 1960-1963), and provides a convenient basis for inexpensive analyses of the 1960 and 11-year follow-up data.

In the spring of 1978, the TALENT staff prepared a brochure describing the Public Use File and offering it for sale to the research community. While the brochures were being printed, a computerized mailing list was compiled from the following sources: (1) a list of researchers who were previous or potential users of the TALENT data bank. (2) policymakers in a variety of federal and state agencies who had at some time expressed interest in Project TALENT; (3) a list of federal legislators and legislative aides with specific interests and responsibilities in the areas of education, career development and employment, population. women's equity, etc., (4) a list of research centers and special interest groups to whom TALENT data would be of use, and (5) several lists of the "top ten" or "top twenty" graduate schools of education, psychology, and sociology. This composite list was coded to indicate the addressees' organizational affiliations and research or policy interests (both general and specific) to facilitate separate printouts of target groups for later mailings on TALENT-related studies (e.g., Women and Mathematics, Lifespan Development, Adolescent Childbearing).

During the summer of 1978, over 300 copies of the Public Use File brochure were mailed. This mailing resulted in a number of responses, which included several requests for additional information about the Public Use File or about Project TALENT in general, as well as five orders (as of 1/15/79) for the Public Use File tapes. (Details of these inquiries and responses have been summarized in previous interim reports.)

Alternative Design Conference

In October 1978, NIE convened a conference to focus on issues associated with the design and conduct of longitudinal research studies. Several papers focusing on different issues associated with large-scale longitudinal research efforts were presented and discussed, including one by project staff dealing with sample attrition and how it can be dealt with.* This

* Abeles, R. P & Wise, L. L. Coping with attrition in a longitudinal study: The case of Project TALENT.

paper is due to be published in a special issue of the Journal of Economics and Business sometime during the next year.

Other Professional Dissemination

Other dissemination activities (supported by AIR or other grants) included several reports of Project TALENT studies at various professional meetings. Papers presented at the 1978 APA meeting and the 1979 AERA meeting are listed below.

- Wise, L. L. The role of mathematics in women's career development. Paper presented at the 1978 annual meeting of the American Psychological Association, Toronto, Ontario, September 1978.

- Steel, L. A lifespan perspective on adults' achievement and life quality. Paper presented at the 1978 annual meeting of the American Psychological Association, Toronto, Ontario, September 1978.

- Wise, L. L., & Steel, L. The effects of school quality on students' knowledge and skills. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, California, April 1979.

- Wise, L. L. Long-term consequences of sex differences in high school mathematics education. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, California, April 1979.

- Steel, L., & Wise, L. L. Origins of sex differences in high school mathematics achievement and participation. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, California, April 1979.

Numerous requests for copies of these papers have since been received and answered.

In addition, in November and December 1978, the Project Director traveled to conferences where he presented findings from the Women and Math project (NIE-G-78-001) and distributed copies of a booklet aimed at conveying these findings to parents, teachers, counselors, and students in nontechnical language. The first of these conferences was a "Conference for People Who Count," organized by the Bay Area Math-Science Network and sponsored by the Women's Bureau, U.S. Department of Labor, San Francisco; the Carnegie Corporation of New York; the Lawrence Hall of Science, Berkeley,

California; and Mills College, in Oakland, California, where the conference took place. The second conference at the Asilomar Conference Grounds in Monterey, California, was the annual meeting of the California Mathematics Council, an affiliate of the National Council of Teachers of Mathematics.

Finally, three book chapters dealing with Project TALENT activities and accomplishments were prepared during the year. They were:

- Wise, L. L., & Steel, L. Educational attainments of the high school classes of 1960 through 1963: The findings from Project TALENT. In A. Kerckhoff (Ed.), Sociology of education and socialization. Greenwich, Connecticut: JAI Press, 1979 (in press).

- Abeles, R. P., Steel, L., & Wise, L. L. Patterns and implications of life course organization: Studies from Project TALENT. In P. B. Baltes & O. G. Brim (Eds.), Lifespan development and behavior, Vol. 3. New York: Academic Press, 1979 (in press).

- Wise, L. L. Project TALENT: Studying the development of our human resources. In J. E. Milholland (Ed.), Ability testing in major assessment studies. San Francisco: Jossey-Bass, (in press).

In addition, project staff were invited, and have agreed, to prepare a chapter on Project TALENT for inclusion in a forthcoming volume on longitudinal research in the United States being edited by Michele Harway of the Center for Longitudinal Research at the University of Southern California.

Attachment A

Schedule of Projects Delivered

Product	Date(s) Submitted
Logs of inquiries received	3/3/78; 4/17/78; 7/17/78; 11/17/78; 8/15/79
Logs of data tape anomalies	3/3/78; 4/17/78; 7/17/78; 11/17/78; 8/15/79
Annotated Bibliography	8/15/79
Report on analysis of differential school effects	8/15/79

ATTACHMENT B

FORMAT OF THE TALENT COLLEGE DATA FILE

Byte Positions	Length	VARIABLE NAME / Values	INFORMATION CATEGORY / Options	Omission Code	Range: Low Value	Range: High Value
1-26	26	COLLNAME	NAME OF COLLEGE--see attached list of standard abbreviations Source: A	NA	NA	NA
26-31	5	TALNUMBR	PROJECT TALENT ID#	NA	01001	52541
32-32	1		S P A C E			
33-38	6	FICECODE	FICE COLLEGE ID CODE Source: B	Blanks	001001	009999
39-39	1		S P A C E			
40-41	2	CONTROLU	TYPE OF CONTROL	Blanks	01	15
		01	City or Municipal government			
		02	County government			
		03	Township government			
		04	District government			
		05	State government			
		06	Territorial government			
		07	National or Federal government			
		08	Proprietary			
		09	Religious Group			
		10	Private			
		11	Private and National			
		12	State and County government			
		13	State and District government			
		14	City and State government			
		15	State and Private			
			Source: A			
42-42	1	SEXCOMPU	SEX COMPOSITION	Blank	1	4
		1	Coeducational			
		2	Coordinate Schools for Men and Women			
		3	Men Only			
		4	Women Only			
			Source: A			
43-43	1	HIGHDEGR	HIGHEST DEGREE OFFERED	Blank	1	5
		1	Two but less than four years of work beyond the 12th grade			
		2	Only the bachelor's and/or first professional degree, e.g., BA, BS, MD, BSE			
		3	Master's and/or second professional degree, e.g., EE, LLD			
		4	Ph.D. and equivalent degrees			
		5	Other			
			Source: A			
44-45	2	TYPEPROG	TYPE OF PROGRAM OFFERED	Blank	1	11
		01	Terminal-Occupational (no bachelor's degree)			
		02	Liberal arts and general			
		03	Liberal arts and general, and terminal-occupational			
		04	Primarily teacher preparatory			
		05	Liberal arts and general, and teacher preparatory			
		06	Liberal arts and general, teacher preparatory, and terminal-occupational			
		07	Professional only (not including teacher preparatory)			
		08	Professional and teacher preparatory			
		09	Professional and terminal-occupational			
		10	Liberal arts and general with 1 or 2 professional schools			
		11	Liberal arts and general with 3 or more professional schools			
			Source: A			

Byte Positions	Length	VARIABLE NAME / Values	INFORMATION CATEGORY / Options	Omission Code	Range: Low Value	Range: High Value
46-46	1		S P A C E			
47-49	3	ENROLLMN	ENROLLMENT--HUNDREDS*	Blank	001	999
			Source: A			
50-50	1		S P A C E			
51-91	41	PROFACCR	PROFESSIONAL ACCREDITATIONS	NA	01	99
		01	Accrediting Association of Bible Colleges: Bible; American Association of Schools of Religious Education: Religious education; American Association of Theological Schools: Theology			
		02	Accrediting Commission for Business Schools: Business; American Association of Collegiate Schools of Business: Business			
		03	American Bar Association, Section of Legal Educations and Admission to the Bar: Law			
		04	American Chemical Society, Committee on Professional Training: Chemistry			
		05	American Council on Education for Journalism: Journalism			
		06	American Council on Pharmaceutical Education: Pharmacy			
		07	American Dental Association, Council on Dental Education: Dental hygiene			
		08	American Dental Association, Council on Dental Education: Dentistry			
		09	American Library Association, Committee on Accreditation: Librarianship			
		10	American Optometric Association, Council on Optometric Education: Optometry			
		11	American Osteopathic Association: Osteopathy			
		12	American Podiatry Association, Coucil on Education: Podiatry			
		13	American Public Health Association: Public Health			
		14	American Veterinary Medical Association, Council on Education: Veterinary Medicine			
		15	Commission on Accreditation of the Council on Social Work Education: Social Work			
		16	Council on Medical Education of the American Medical Association: Medical record librarians, medical technology, occupational therapy, physical therapy, X-ray technology			
		17	Engineers' Council for Professional Development: Engineering, engineering technology			
		18	Liaison Committee on Medical Education: Medicine and basic medical sciences			
		19	National Architectural Accrediting Board: Architecture			
		20	National Association of Schools of Music: Music			
		21	National Council for Accreditation of Teacher Education: Teacher education			
		22	National League for Nursing: Nursing			
		23	Society of American Foresters: Forestry			
		99	No accreditations			
			Source: A			
92-95	4	COMMPOPU	POPULATION OF COMMUNITY--THOUSANDS*		0001	9999
			Source: E			
96-96	1		S P A C E			
97-97	1	SELECTCD	SELECTIVITY--Astin Index	Blank	1	7
		1	Least Selective 7%			
		2	More than 7%, less than 85%			
		3	More than 15%, less than 57%			
		4	More than 43%, less than 30%			
		5	More than 70%, less than 15%			
		6	More than 85%, less than 6%			
		7	More selective 6%			
			Source: D			

Byte Positions	Length	VARIABLE NAME / Values	INFORMATION CATEGORY / Options	Omission Code	Range Low Value	Range High Value
98-100	3	PROINSTA	PERCENT OF STUDENTS FROM IN-STATE Source: C	Blank	001	100
101-101	1	MAINORBR	MAIN SCHOOL OR BRANCH IDENTIFICATION	Blank	1	7
		1	Main Campus, no branches exist			
		2	Main campus, including some branches. Data coded for main campus			
		3	Main campus, with branches coded separately			
		4	Branch campus, TALENT #, FICE code and community population distinct for this branch, other data coded for main campus			
		5	Multiple branch campuses. TALENT # only distinguishes branches from main campus, not from each other. Data based on main campus values or given as missing			
		6	Main campus, changed TALENT # prior to 1964; 1964 TALENT # coded at right			
		7	Main Campus, changed TALENT # after 1964; 1964 TALENT # coded at right			
102-102	1		S P A C E			
103-107	5	MAINTALN	TALENT # OF MAIN CAMPUS (IN 1964) if different	Blank	01001	52541

*Enrollments and populations are truncated (rounded down) so that 2 means 200-299 enrollment or 2000-2999 population EXCEPT THAT 1 means 001-199 or 0001-1999.

Sources

A. U.S. Office of Education, Education Directory, Pt 3: Higher Education, 1964-65.

B. Nat'l Center for Education Statistics, Education Directory, Part 3, 1968-69.

C. Allen M. Cartter, Ed., American Universities and Colleges, ninth edition. American Council on Education, 1964.

D. Alexander W. Astin, Predicting Academic Performance in College. The Free Press, Collier-Macmillan Ltd., New York, 1971.

E. Rand McNally Road Atlas, 43rd annual edition, 1967.
OR
US Department of Commerce, Bureau of the Census, 1960 Census of Population, Vol. I, Characteristics of the Population, Part A, Number of Inhabitants, US GPO, Washington, DC 1961.

Standard Abbreviations

AS	Applied Science
A&M	Agricultural and Mechnaical
A&S	Arts and Sciences
Ac	Academy
Acctg	Accounting
Adv	Advanced
Aero	Aeronautical
Ag	Agricultural
Am	American
Appl	Applied
Aq	Aquinas
Bapt	Baptist
Br	Branch
Bur	Bureau
Bus	Business
C	College
CC	Community College
Cath	Catholic
C'giate	Collegiate
Chrst	Christian
Cmp	Campus
Co	County
Cons	Conservatory
Cr	Cross
Ctr	Center
D	Dental
Dist	District
Div	Divinity
Dom	Dominican
E	East
En	Eastern
Engnr	Engineering
Epis	Episcopal
For	Foreign
Frst	Forest
Ft	Fort
Gen'l	General
Gr	Graduate
HUC-JIR	Hebrew Union College, Jewish Institute of Religion
Hosp	Hospital
Hyg	Hygienists
Ind	Industry, Industrial
Inst	Institute
Int'l	International
Isl	Island
Jr	Junior
Jus	Justice
KC	Kansas City
LA	Los Angeles
LR	Labor Relations
Luth	Lutheran
Mech	Mechanical
Med	Medical, Medicine

Meth	Methodist
Mt	Mount
Mus, Mus'l	Music, Musical
Metro	Metropolitan
N	North
Nat'l	National
Nn	Northern
Nov	Novitiate
O L	Our Lady
Ocean	Oceanographic
Opt	Optometry
Osteo	Osteopathy
P,. Polytch	Polytechnic
Pac	Pacific
Penin	Peninsula
Phil	Philosophy
Photo	Photograph
Prot	Protestant
RioGran	Rio Grande
Ref	Reformed
Res	Residence
Rngr	Ranger
S	South
SD	San Diego
Sa	Saint
Sch	School
Schol	Scholasticate
Sem	Seminary
SH, Scrd Hrt	Sacred Heart
Sn	Southern
Sr	Senior
Stf	Staff
St	State
Stnd	Standard
Std	Study
Surg	Surgery
T	Theatre
T's	Teachers
Tch	Technical
Tech	Technology
Th	Theology, Theological
U	University
USDA	United States Department of Agriculture
Vl	Ville
W	West
Wash	Washington
Wn	Western
Wrkrs	Workers

ATTACHMENT C

REPORT ON ANALYSIS OF DIFFERENTIAL SCHOOL EFFECTS

The Effects of School Quality on Students' Knowledge and Skills

Lauress Wise
Lauri Steel

American Institutes for Research
P.O. Box 1113
Palo Alto, CA 94302

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The Effects of School Quality on Students' Knowledge and Skills

Differences between schools in the quality of education received by their students is an area of concern to a wide range of groups, from individual parents to federal policymakers. Much of the civil rights legislation, massive school busing programs, and the fundamental changes in school financing implied by the Serrano Decision have all been aimed at eliminating differences between schools in the educational opportunity they afford their students. At the individual level, many parents base housing selections first and foremost on the reputations of the schools their children would attend.

The Coleman report on racial differences in school quality touched off a research and policy controversy that continues to this day. In 1975, Christopher Jencks and Marsha Brown published a study of differences in school quality in which they found few relationships between high school characteristics and school effectiveness. However, that study left open a number of questions that seemed worthy of further investigation. In particular, the cognitive measures they used reflected, for the most part, skills developed prior to high school and thus were not especially appropriate for assessing cognitive gains during high school. Gains in skills more closely related to high school curricula were not investigated. In addition, the interactions between school effects and subject matter areas were not investigated, thus raising the possibility that significant school effects may have been missed. A small grant was obtained by AIR staff from the National Institute of Education to investigate these and other issues further. This paper reports the results of that further investigation.

Sample and Instruments

Both the Jencks and Brown study and the current investigation used data from Project TALENT to assess differences in student gains at the high school level. Project TALENT is a long-term longitudinal study of the high school classes of 1960-1963. It began in 1960 with

a two-day battery of tests and questionnaires completed by a nationally representative sample of over 375,000 students in roughly 1,000 high schools. The current study focuses on a subset of the larger sample consisting of approximately 7,200 students from 107 of the original schools who were tested as 9th graders in 1960 and then retested in 1963 as 12th graders. The retest study used the same test instruments that were used in 1960 except that, due to time constraints, each student completed only one-half of the original battery. Six different forms were constructed so that each test was administered in half of the schools and any two tests were administered together in at least one-sixth of the schools. (See Table 1.) A complete description of the procedures used in the retest study and the basic findings are given in The High School Years: Growth in Cognitive Skills (Shaycoft, 1967).

Results

As stated previously, the first aspect of the Jencks and Brown study to be addressed was that the cognitive measures studied were not related to material included in the curriculum of most high schools. Abstract reasoning, vocabulary, and arithmetic reasoning are all a reflection of student aptitude rather than achievement. The reading comprehension, arithmetic computation, social studies, and total knowledge scales are all related to material generally covered way before high school. Table 2 shows the measures that we chose to analyze in expanding the Jencks and Brown analyses. The last variable on the list, expected education, was measured using a five-point scale ranging from "do not expect to finish high school" to "expect to study for an advanced degree." The other variables are all test scores.

In order to control for initial student differences, we regressed each 12th grade score on the 9th grade score and on general academic abilities, SES, and educational expectation, all measured in 9th grade. (See Table 3.) We then computed the score that each student was expected to receive based on his or her 9th grade characteristics. The remaining analyses focus on the students' "unexpected" scores--that is, the difference (positive or negative) between the student's actual and expected scores.

TABLE 1

Composition of the Seven Retest Batteries (Spring 1963)

Test Code #	Test	Battery						
190	Information I	A	B	C				V
192	Information II	A			D	E		
211	Memory for Sentences*							
212	Memory for Words		B		D		F	
220	Disguised Words			C		E	F	
230	English		B		D		F	V
240	Word Functions in Sentences			C		E	F	
250	Reading Comprehension			C		E	F	V
260	Creativity			C		E	F	V
270	Mechanical Reasoning			C		E	F	V
281	Visualization in Two Dimensions			C		E	F	
282	Visualization in Three Dimensions			C		E	F	V
290	Abstract Reasoning	A	B	C	D	E	F	V
311	Math I. Arithmetic Reasoning		B		D		F	V
312	Math II. Introductory H.S. Math		B		D		F	
333	Math III. Advanced H.S. Math		B		D		F	
410	Arithmetic Computation		B		D		F	V
420	Table Reading			C		E	F	
430	Clerical Checking			C		E	F	V
440	Object Inspection			C		E	F	V
500	Preferences*							
600	Student Activities Inventory*							
700	Interest Inventory	A			D	E		
800'	Revised Student Information Blank	A			D	E		
	Themes							
	"My Views about an Ideal Occupation"	A			D	E		
	Theme on help received from testing and counseling	A			D	E		

*Not included in any retest battery

NOTE: From The High School Years: Growth in Cognitive Skills (Shaycoft, 1967, p C-3)

Table 2

Average Student Gains for Each Variable

Variable	N	9th Grade Mean	9th Grade S.D.	12th Grade Mean	12th Grade S.D.	Average Gain (relative to 9th grade S.D.)
Literature	3822	10.6	3.9	15.0	4.8	1.13
English	3627	78.8	12.7	86.2	13.3	.58
Social Studies	3822	13.5	5.1	16.5	5.0	.59
Math Information	3822	7.4	3.8	10.6	6.3	.84
Introductory Math	3627	10.2	4.0	11.8	5.2	.40
Advanced Math	3627	2.3	1.5	4.0	2.9	1.13
Physical Science	3822	8.8	3.6	9.7	4.4	.25
Biological Science	3822	5.4	2.3	6.5	2.3	.48
Art	3366	5.7	2.4	7.2	2.5	.63
Accounting/Business	3366	4.0	1.8	5.7	2.0	.94
Educational Expectations	3339	3.94	1.5	3.91	1.4	-.02 (ns)

Table 3

Regression of 12th Grade Scores on Ninth Grade Scores, General Academic Ability, SES, and Educational Aspiration

Variable	Standardized Regression Coefficients				Multiple R^2
	9th Grade Score	Gen. Acad. Aptitude	SES	Educational Expectations	
Literature	.406	.386	.057	.081	.63
English	.321	.425	ns	ns	.52
Social Studies	.595	.232	.018	.033	.64
Math Information	.375	.345	.070	.150	.61
Introductory Math	.271	.189	.390	.187	.54
Advanced Math	.095	.448	.017	.188	.35
Physical Science	.547	.267	.041	.081	.64
Biological Science	.496	.245	.026	.045	.48
Art	.402	.324	.076	.021	.49
Accounting/Business	.264	.379	.062	-.051	.35
Educational Expectations	X	.193	.147	.442	.41

Table 4 shows the results of analyses of variance testing the extent to which the students from some schools averaged much better than expected while students from other schools averaged significantly worse than expected. Significant variation between schools was found for all of the measures analyzed. Differences between schools accounted for between 3 and 12.5 percent of the variation in the "unexpected" gain scores, which translated into from 2 to 5 percent of the total variation in 12th grade scores. It is worth noting that the social studies measure was among the highest in the percent of variation between schools in the Jencks and Brown study. In our analyses, most of the other variables showed greater between-school variation, confirming our hypothesis that between-school variation would be greater for measures more closely related to high school curriculum.

The second extension of the Jencks and Brown study was to examine the correlation between school effects in different subject matter areas. The mean unexpected gain on each measure was computed for each school as a measure of the "school effect." These measures were then correlated across schools. (See Table 5.) Because of the design of the retest study, we are only reporting the correlations between variables that appeared on the same form. Each of these correlations are based on roughly 50 schools. Correlations between variables on different forms would be based on only 15-17 schools--too few for reliable analyses.

All of the correlations are positive except for the correlations between art and accounting knowledge and educational expectations. In schools where students showed greater than expected gains in art and accounting knowledge, the students also showed decreased educational expectations. While the remaining correlations are positive, most of them are small. Effects on the two math measures are significantly correlated, as are effects on knowledge in the two science areas. Otherwise only English and introductory math showed a significant correlation. (Both are college-preparatory subject areas.) The lack of strong correlations between most of the school effects suggests that the effects may be more closely related to particular departments or even to particular teachers rather than to school programs as a whole.

In an effort to determine what it was about the schools in the

Table 4

Analysis of Variation Between Schools
in Mean Residual Gain Scores

Variable	Eta Squared[1]	Significance Level of Between-School Variation		% of Total Variance Explained[2]
		F	P	
Literature	.125	7.24	<.0001	4.6
English	.084	4.80	<.0001	4.0
Social Studies	.069	3.72	<.0001	2.5
Math Information	.058	3.11	<.0001	2.3
Introductory Math	.065	3.61	<.0001	3.0
Advanced Math	.046	2.50	<.0001	3.0
Physical Science	.058	3.09	<.0001	3.7
Biological Science	.033	1.74	.0007	1.7
Art	.055	3.18	<.0001	2.8
Accounting/Business	.040	2.31	<.0001	2.6
Educational Expectations	.048	2.72	<.0001	2.8

1. Eta squared gives the proportion of the variation in residual (unexpected) score gains that can be attributed to school effects.

2. The last column givesthe percent of variation in 12th grade scores that can be attributed to school effects that are independent of initial abilities or other control characteristics. This percent is much less than the total between-school variation in 12th grade scores since schools varied widely in the initial abilities of their students.

Table 5

Correlations Between School Effects on Cognitive Scores

Information Part I Variables
(54 schools)

	Literature	Social Studies	Math	Physical Science	Biological Science
Literature	1.00	.21	.04	.15	.11
Social Studies	.21	1.00	.01	.22	.16
Math	.04	.01	1.00	.13	.01
Physical Science	.15	.22	.13	1.00	.38**
Biological Science	.11	.16	.01	.38**	1.00

Math and English Achievement
(51 schools)

	Introductory Math	Advanced Math	English
Introductory Math	1.00	.58***	.45***
Advanced Math	.58***	1.00	.24
English	.45***	.24	1.00

Information Part II and Educational Expectations
(44 schools)

	Art	Accounting/ Business	Educational Expectations
Art	1.00	.30*	-.46**
Accounting/ Business	.30*	1.00	-.34*
Educational Expectations	-.46**	-.34*	1.00

* $p \leq .10$

** $p \leq .05$

*** $p \leq .01$

TALENT sample that produced the effects observed, several characteristics of the schools were correlated with the residual score gains (i.e., the amount of unexpected score gains) for the various subject areas. The results are presented in Table 6. Approximately 20% of the correlations proved significant at least at the .05 level, which is more than one would have expected by chance. In addition, many more of the correlations had values at .10 or greater, which, while not statistically significant, are sufficiently large to merit some attention.

In examining these results, one is struck by the fact that, for the most part, the various dimensions of schools considered here do not have consistent effects on the residual score gains. Rather, dimensions which are positively related to score gains in the humanities (i.e., literature, English, social studies) may be negatively related to score gains in math and science and/or in nonacademic areas (i.e., art, accounting/business), and vice versa. For example, lower levels of per-pupil expenditures and lower tax rates per $1,000 are both associated with greater-than-expected score gains in the humanities, while high expenditures and tax rates are associated with greater-than-expected gains in math-science areas and in nonacademic subjects. This may reflect greater richness of math-science and nonacademic curricula in schools with greater financial resources. English and social studies tend to be required of all students during much of high school and thus are more likely to be offered regardless of school wealth.

The relationships between characteristics of the student body and unexpected score gains in the different areas are especially diverse. Schools with higher proportions of students planning on college or with more able students are likely to have higher-than-expected gains in English and/or Literature and especially in nonacademic subjects, but lower-than-expected gains in math-science areas. Schools with students from higher-SES backgrounds and schools in larger communities had lower-than-expected gains in both humanities and in math and/or science subjects, but higher-than-expected gains in nonacademic areas. Schools with higher proportions of black students had lower-than-expected gains in both humanities and nonacademic subjects, but higher-than-expected gains in math. (The wide disparity between the all-white or mostly white schools and the few all-black schools in the sample, however, make this

Table 6

Correlations of School Characteristics with School Effects

	Residual Score Gains										
School Characteristics	Lit.	English	Social Studies	Math Info	Intro. Math	Adv. Math	Physical Science	Biological Science	Art	Accounting/ Business	Educ. Expec.
Community Size	.02	.04	-.11	-.25*	-.11	.01	.02	-.05	.21	.24	.06
% Black	-.17	-.12	-.33**	.29**	.20	.08	.02	.01	-.32**	-.55***	.69***
% Female	.05	-.12	-.28**	-.13	-.03	-.24*	-.43***	-.16	.16	-.19	.00
Mean SES	.05	.04	-.17	-.20	-.06	.06	.16	.06	.50***	.27*	-.49***
Average Acad. Apt.	.15	.04	-.04	-.27**	-.28	-.03	-.12	-.18	.37***	.44***	-.54***
% College Bound	.16	.17	.03	-.11	-.21	.03	-.36***	-.11	.34**	.16	.06
% of Parents in PTA	.06	.01	-.24*	-.04	.17	.00	-.05	-.21	-.08	-.11	.05
Daily Absenteeism	.17	.05	.11	-.14	.20	-.02	-.02	-.01	-.12	-.23	.37*
Avg. Homework/Week	.23*	.04	-.22	.10	.15	-.11	-.04	-.02	.19	-.10	.21
% Taking New Work in Summer School	.14	.05	-.09	-.32**	-.04	-.01	.00	.03	.21	-.14	-.09
Guidance Program	-.10	-.13	.11	-.18	-.11	.01	-.24*	-.20	.37***	.07	-.29**
Tax Rate	-.20	-.05	-.18	.02	.10	.21	.02	-.09	.29**	.24	-.22
Per-Pupil Expenditure	-.31**	-.07	.17	.04	.29**	.18	.15	.00	.27*	.24	-.47**
Number of Schools	54	51	54	54	51	51	54	54	44	44	44

* $p < .10$
** $p < .05$
*** $p < .01$

latter set of results somewhat suspect.)

Interestingly, a higher proportion of girls in the student body was consistently, and negatively, related to unexpected score gains in all areas except art. The negative impact on math, science, and accounting score gains is not surprising, in light of women's lesser tendency to take these courses in high school. However, the impact on English and social studies scores is surprising, as these are subjects in which women generally tend to perform better than men. It may be that schools where many, or all, of the students are female are less academically oriented, due to women's lesser tendency in the early 1960s to go on to college, and thus have lower-than-expected score gains.

The presence of a school guidance program was also associated with lower-than-expected score gains in academic subjects but with higher-than-expected gains in nonacademic subjects. One wonders whether the effect of counselors was to encourage more able students to take nonacademic courses, or whether--noting the similarity of the results--the effect of the presence of a guidance program is confounded by the size of the community or the students' socioeconomic background.

Two factors which one would have intuitively expected to relate to higher-than-expected score gains, particularly in academic subjects, were low daily absenteeism and higher average amounts of homework per week. Both characteristics, however, were quite inconsistent in their impact on score gains.

Discussion

The relationships between school effects and school characteristics were sufficiently inconsistent that we were led to question some of the assumptions in the approach used in both the Jencks and Brown study and the present study. In particular, because SES and general academic abilities were controlled at the individual student level, we did not expect to find any significant relationships remaining at the school level. Figure 1 shows a plot of mean "unexpected" changes in educational expectations by mean SES level. Nearly all of the assumptions implicit in the regression approach are quite clearly violated: (1) the variance

FIGURE 1

PLOT OF INCREASED EDUC. EXP. BY MEAN SES LEGEND: A = 1 OBS , B = 2 OBS , ETC

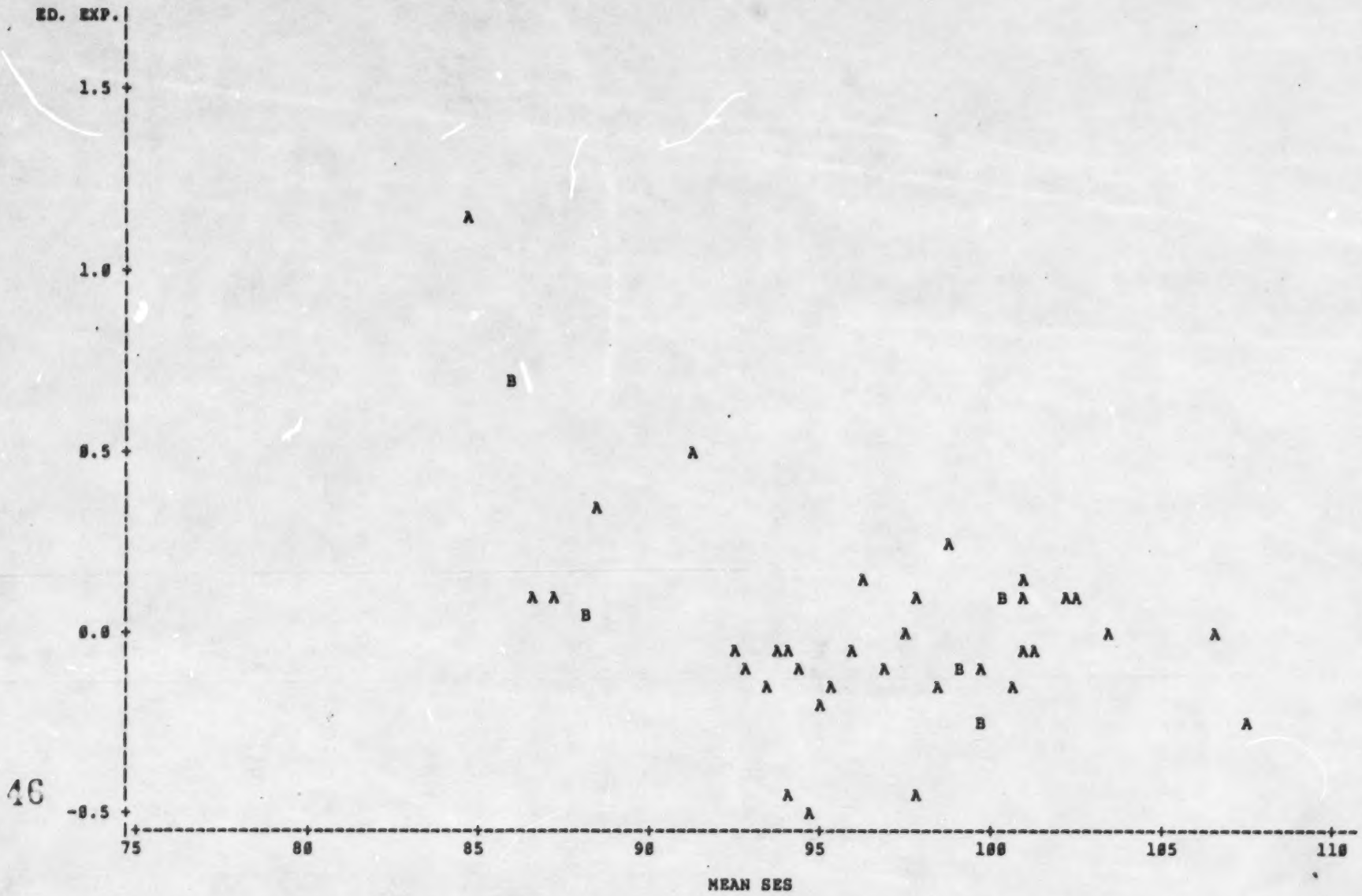


FIGURE 2

PLOT OF INCREASED EDUC. EXP. BY % BLACK LEGEND: A = 1 OBS , B = 2 OBS , ETC

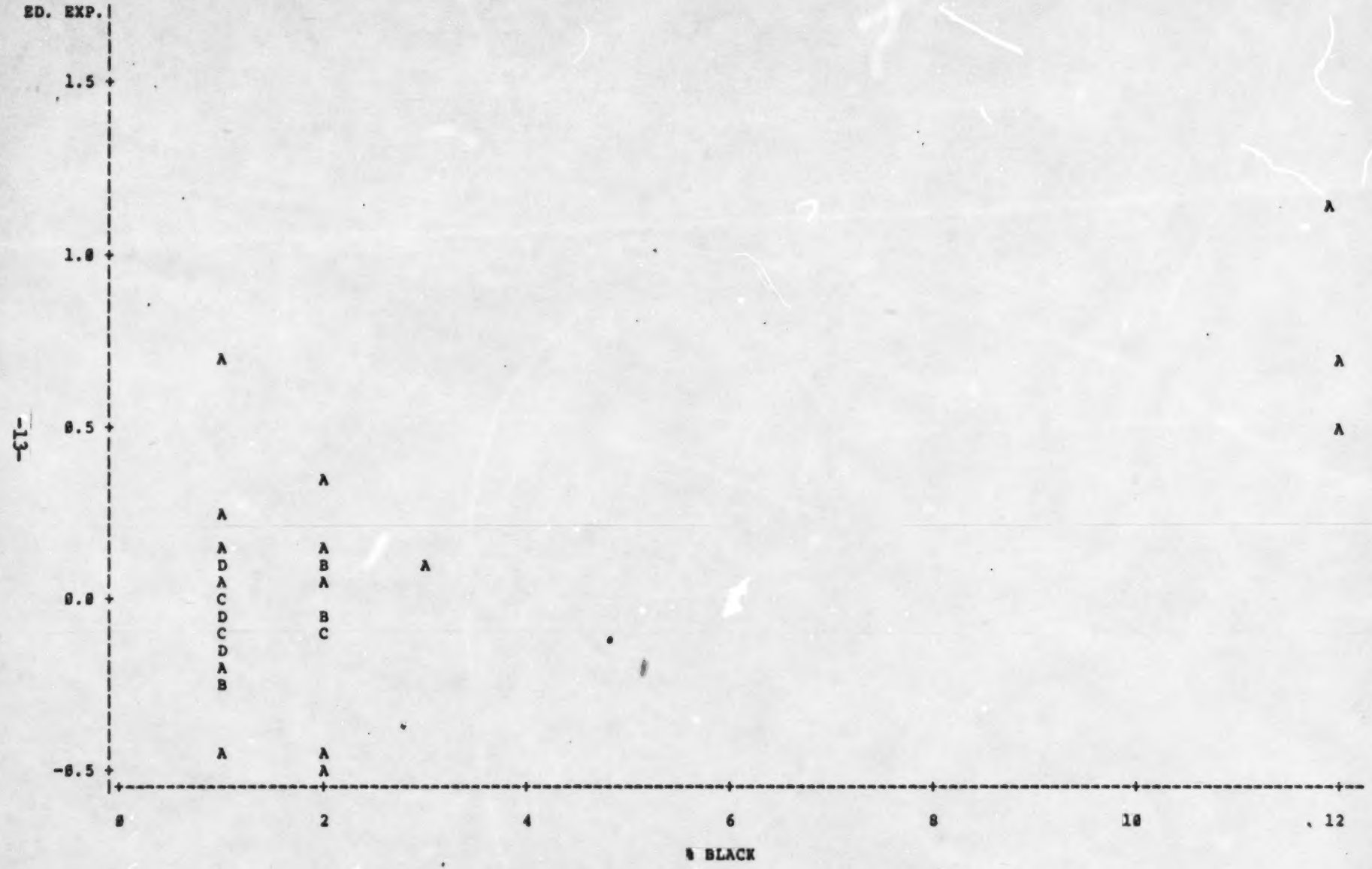
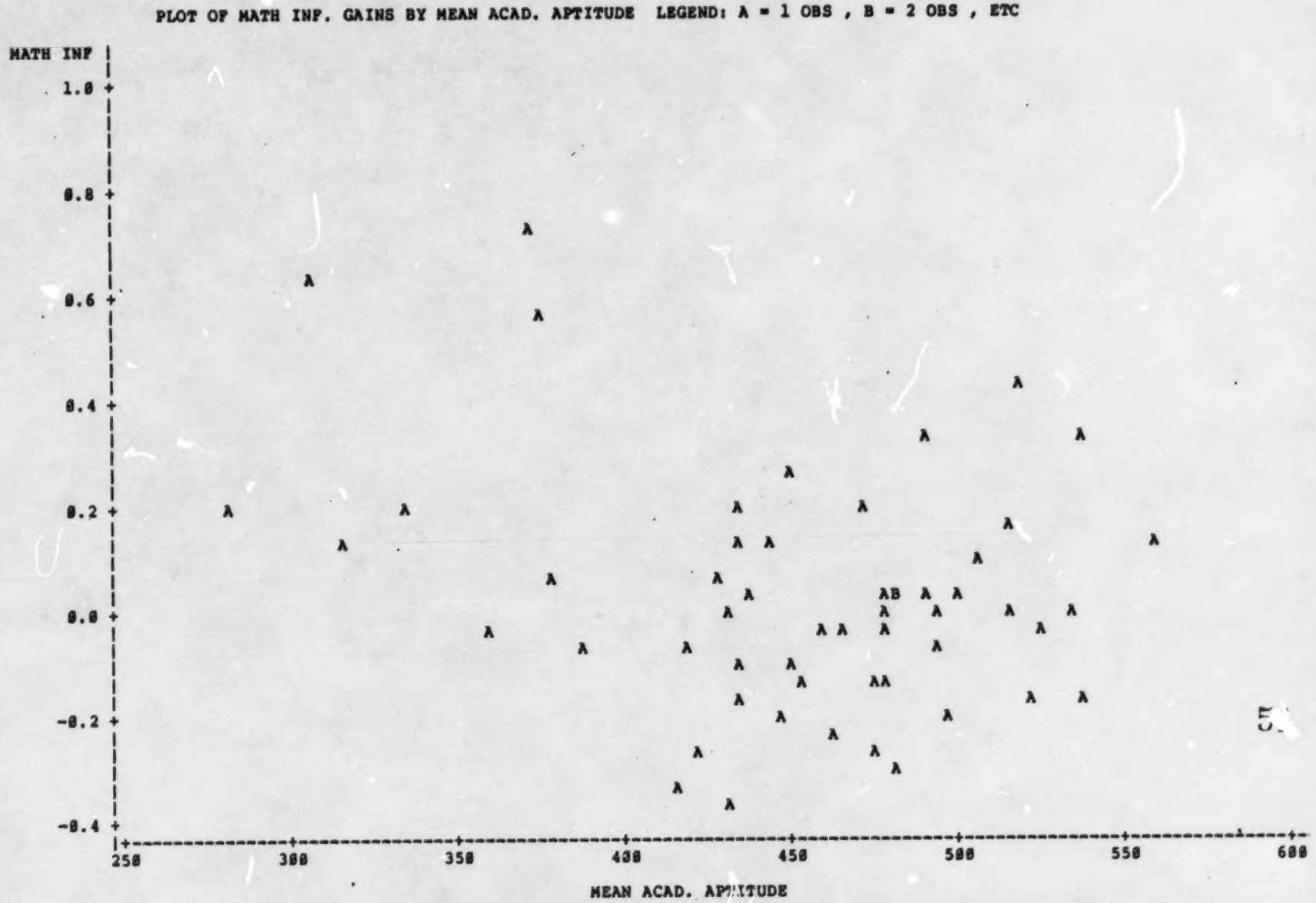


FIGURE 3


PLOT OF MATH INF. GAINS BY MEAN ACAD. APTITUDE LEGEND: A = 1 OBS , B = 2 OBS , ETC
MATH INF
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
250
300
350
400
450
500
550
600
MEAN ACAD. APTITUDE

(standard error of prediction) is much greater at lower levels of SES, (2) the relationship between the two variables is curvilinear with the lowest expectations occurring in schools near the mean level of SES, and (3) the distribution of the dependent variable is quite highly skewed. Similar problems are also evident in Figures 2 and 3. (Figure 2 also reflects the unfortunately high level of racial segregation in 1960 high schools.)

Academic abilities and SES do not appear to have been adequately controlled. Many of the correlations between other school characteristics and school effects are undoubtedly inflated or suppressed as a result of their relationship to these two measures. (Per-pupil expenditures were highly correlated with SES, for example.) Further analyses, modeling the relationships between the independent variables, are quite clearly needed to determine the extent of possible distortions.

A second part of our study focused on school effects on subsequent educational and career attainment. In analyzing these outcomes we found significant interactions between school effects and survey response status (e.g., whether the participant returned a mailed questionnaire or was tracked down and interviewed by phone in the nonrespondent study). These interactions raise serious questions about the corresponding results in the Jencks and Brown study, but could not be dealt with within the scope of the present study.

Summary

This study examined differences between high schools in students' cognitive score gains. Highly significant differences were found in all subject matter areas examined, as well as in changes in educational aspirations. These school differences accounted for a moderate portion of the total variance in 12th grade scores. In general, school effects were not highly correlated across subject matter areas, suggesting that these effects may be more closely related to individual departments or teachers than to characteristics of the school as a whole.

Further analyses of the relationship of particular school characteristics to school effects and of effects of schools on subsequent outcomes were thwarted by analytical problems. These problems also called into question many of the findings in an earlier study by Jencks

and Brown using most of the same data. Additional work to develop and test models of the antecedent characteristics and of the relationship of school effects to survey response probability is needed to extend the current analyses.